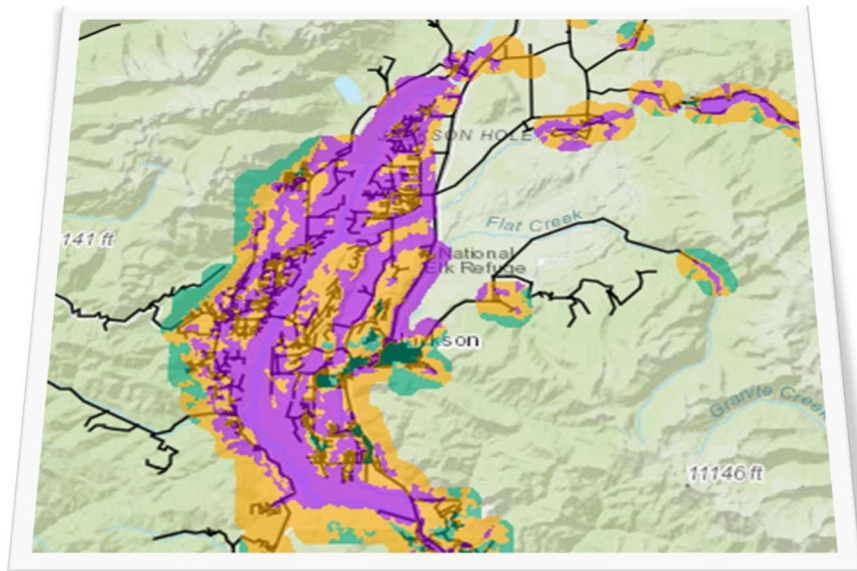


FOCAL SPECIES HABITAT MAPPING FOR TETON COUNTY, WY

SECOND REPORT ADDENDUM



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PROCESS DOCUMENTATION - 2017-2024

This methodology report is a second addendum to the *Focal Species Habitat Mapping for Teton County, WY* report (April 21, 2017). The methodologies outlined here will be difficult to decipher without a complete understanding of the full methodology as described in the original April 2017 report and the first addendum, *Focal Species Habitat Mapping for Teton County, WY Report Addendum* (June 22, 2018). A full and complete understanding of the process can be best achieved through a thorough review of:

- the April 2017 report's content (primarily pages 1-20) for background and initial methodology,
- the June 2018 report addendum to understand updates to terminology, data inputs and an initial re-processing of suitable habitat models and the resulting relative habitat values layer, and
- this October 2024 report addendum summarizing the methodology for converting the relative habitat values layer to the Tiered Natural Resources Overlay per the recommendation outlined in the 2018 report addendum.

It is important to reiterate that neither the general methodology nor the underlying types of information used have changed since the project was initiated.

TIERED NRO METHODOLOGY

The methodology documented here primarily outlines the Geographic Information System (GIS) methods used to convert a raster data set (pixilated coverage layer) to a polygon data set (polygon data layer). This conversion was necessary for the projection of a Tiered NRO layer onto a web-based mapping system as well as for ease of use by the general public. As a result, much of this report addendum is most appropriate for use by a GIS professional. Nonetheless, detailed documentation here is necessary for use in future updates to Teton County's Tiered NRO (*Future Updates section 2017 report, p. 15*).

RASTER CONVERSION – DECIMAL TO INTEGER

The 30m pixel, relative values habitat layer that resulted from the 2018 work (*documented in the 2018 Report Addendum*) was a floating point, raster with underlying decimal values. In order to convert this layer to a polygon, an integer raster (underlying values whole numbers without decimal places) was required. The ESRI Round Up tool (Spatial Analysis toolkit) was used convert all decimal place values to the next highest value integer. Floating point data type was maintained while all values were converted to a whole number (decimal place maintained as #.0). For example:

<u>Round Up Tool Input Value</u>	<u>Round Up Tool Output Value</u>
>5.0 through ≤6.0	6.0
>6.0 through ≤7.0	7.0

The whole number, floating point raster layer was then converted to an integer (no decimal place) raster using the ESRI Int (Integer) tool (Spatial Analyst toolkit). Because the input data were whole number values, the tool's function in this methodology was to convert the raster type from a floating point to an integer raster. The pixel values were maintained through the Int tool process while decimal places (#.0) were removed.

RASTER CONVERSION – RASTER TO POLYGON

The integer raster was converted to a polygon layer using ESRI's Raster to Polygon tool (Conversion Toolkit). A simplified polygon output was employed.



(ArcMap.com Raster to Polygon Tools Help)

A “Tier” attribute was added to the polygon layer and populated from the input, gridcode value based on the following values:

<u>Integer Value</u>	<u>Tier</u>
1 to 6	Low
7 to 13	Mid
≥14.0	High

The tiers identified correspond to those recommended in the 2018 Report Addendum adapted to account for the rounding up process. For instance, the 2018 report recommended that the values of greater than 6 to 13 be assigned to the Mid Tier. A value greater than 6 was rounded up to an integer of 7 while a value of 13.0 was maintained as a 13. A value of 13.0001 (for example) was rounded up to an integer of 14. Therefore, integer values of 7 to 13 were assigned to the Mid Tier (per 2018 Report Addendum intent).

POLYGON SIMPLIFICATION

Once individual polygons were classified by tier, individual polygons were merged by tier to three multipart polygons (Merge tool) before being separated again into single polygons (Explode tool) thereby combining adjoining polygons of the same tier. Resulting polygons of less than 35 acres and completely surrounded by another tier were identified (e.g. 25 acre mid tier polygon completely surrounded by a high tier polygon). The identified polygons 5- 35 acres were visually analyzed for landscape consistency with the surrounding polygon. In all cases, the landscape within the smaller polygon was consistent with the surrounding landscape in the larger polygon. Therefore, these internal polygons were incorporated (Merge Tool) into the larger polygon for simplification and consistency of the Tiered NRO tool. Many of the smaller polygons were remnants (located on the edge of the layer) from when the dataset was clipped to private lands and adjacent public lands (½ mile buffer) in 2018. Additionally, smaller polygons completely surrounded by a larger polygon likely resulted from the 1.0 acre moving window methodology used in the 2018 processing. A larger moving window would have resulted in a coarser output. Incorporation of smaller polygons at this stage was a fine-tuning of the 1-acre moving window methodology.

TIERED NRO

The resulting Tiered NRO characterizes ±189,652 acres of Teton County. These areas include the central core areas of private lands, inclusive of public lands, and ½ mile buffer. Private inholdings (single parcels) encompassed by large areas of public lands (Grand Teton National Park, Bridger-Teton National Forest, Caribou-Targhee National Forest primary parcels) were not included in the Tiered NRO layer due to their small size. The Tiered NRO layer characterized the acres covered as the following:

<u>Tier</u>	<u>Acres</u>	<u>Percent of Total</u>
Base	26,816	14%
Mid	97,414	51%
High	65,422	35%
Total	189,652	100%

SIMILAR PROJECT

In the 2017 *Focal Species Habitat Mapping for Teton County* report, two similar projects are summarized. In 2023 a project in Gallatin Valley, MT was brought to fruition which is worth incorporating as another similar project. While the *Gallatin Valley Sensitive Lands Protection Plan* (Gallatin Plan; <https://gallatinvalleyplan.bozeman.net/>), is not the same as the work that has been conducted in Teton County, the themes and intentions of the two projects do overlap. In particular, the Gallatin Plan shares similar values including “secure the long-term ecological health of the region” and “identify benefits and best practices for development in harmony with the natural environment” (Project Plan Project Goals; <https://gallatinvalleyplan.bozeman.net/>). The Gallatin Plan is informed by an extensive GIS mapping effort bringing together natural resource data sets at a variety of scales from the landscape to the parcel. Within these data layers, some of the GIS methodologies used are similar as those used in the development of Teton County’s Tiered NRO. Similarly, the Gallatin Plan intends to update its GIS mapping effort as new data is available and their first Tier 1 Recommendation is that of “Land Use Regulation Reform” which was prioritized by the Working Group as having the greatest impact on the protection of sensitive lands.